

CLAIMS:

Sub A

1. A method for use in a transmitter, the method comprising the steps of:
2 processing N program channels into M clusters of program channels, such that at
3 least k programs channels are grouped in each cluster, where $k > 1$; $M > 1$, and $(M)(k) \leq$
4 N ; and
5 transmitting a transmission signal representing the M clusters and including cluster
6 synchronization information for each of the M clusters such that the cluster
7 synchronization information for each cluster is identical.
- 1 2. The method of claim 1, wherein the identical cluster synchronization
2 information is represented by a maximal length PN (pseudo-random number) sequence.
- 1 3. The method of claim 2 further comprising the step of using an eight-stage linear
2 feedback shift register for generating the maximal length PN sequence prior to the
3 transmitting step.
- 1 4. A method for use in a receiver, the method comprising the steps of:
2 receiving a signal representing (a) M clusters of program channels, such that at
3 least k programs channels are grouped in each cluster, where $k > 1$; $M > 1$, and (b) cluster
4 synchronization information for each cluster of the M clusters, wherein the cluster
5 synchronization information for each cluster of the M clusters is identical; and
6 using the received cluster synchronization information for identifying individual
7 ones of the M clusters of program channels.
- 1 5. The method of claim 4, wherein the identical cluster synchronization
2 information is represented by a maximal length PN (pseudo-random number) sequence.
- 1 6. The method of claim 4, wherein the using step includes the steps of:
2 correlating cluster synchronization information for each cluster for providing
3 correlation data for each cluster; and
4 comparing the correlation data for each cluster for identifying the individual ones

5 of the M cluster of program channels.

1 7. The method of claim 6, wherein the comparing step compares phases of the
2 correlation data for each cluster for identifying individual ones of the M clusters of
3 program channels.

1 8. The method of claim 6 further comprising the step of combining the correlation
2 data for each cluster for providing a cluster synchronization signal.

1 9. A method for use in a receiver, the method comprising the steps of:
2 demodulating a signal to provide a baseband signal representing a transmission
3 frame comprising clusters of data and, for at least two of the clusters, further comprising
4 cluster-specific synchronization data and wherein values of the cluster-specific
5 synchronization data is the same for the at least two of the clusters; and
6 using the cluster specific synchronization data to identify individual ones of the
7 clusters of data.

1 10. The method of claim 9, wherein the value of the cluster-specific
2 synchronization data, which is the same for the at least two of the clusters, is represented
3 by a maximal length PN (pseudo-random number) sequence.

1 11. The method of claim 9, wherein the using step includes the steps of:
2 correlating the cluster-specific synchronization data for the at least two clusters for
3 providing correlation data for the at least two clusters; and
4 comparing the correlation data for the at least two clusters for identifying the
5 individual ones of the clusters of data.

1 12. The method of claim 11, wherein the comparing step compares phases of the
2 correlation data for the at least two clusters for identifying individual ones of the clusters
3 of data.

1 13. The method of claim 11, further comprising the step of combining the
2 correlation data for the at least two clusters for providing a cluster synchronization signal.

1 14. Transmitter apparatus comprising:
2 a transmission frame assembler for forming a signal representing M clusters of
3 program channels, such that at least k programs channels are grouped in each cluster,
4 where $k > 1$; $M > 1$, and further representing cluster synchronization information for each
5 of the M clusters such that the cluster synchronization information for each cluster is
6 identical; and
7 transmitting the signal.

1 15. The apparatus of claim 14, wherein the identical cluster synchronization
2 information is represented by a maximal length PN (pseudo-random number) sequence.

1 16. The apparatus of claim 15 further comprising an eight-stage linear feedback
2 shift register for generating the maximal length PN sequence.

1 17. A receiver comprising:
2 means for receiving a signal representing (a) M clusters of program channels, such
3 that at least k programs channels are grouped in each cluster, where $k > 1$; $M > 1$, and (b)
4 cluster synchronization information for each cluster of the M clusters, wherein the cluster
5 synchronization information for each cluster of the M clusters is identical; and
6 means for using the received cluster synchronization information for identifying
7 individual ones of the M clusters of program channels.

1 18. The receiver of claim 17, wherein the identical cluster synchronization
2 information is represented by a maximal length PN (pseudo-random number) sequence.

1 19. The receiver of claim 17, wherein the means for using further comprises:
2 means for correlating cluster synchronization information for each cluster for
3 providing correlation data for each cluster; and
4 means for comparing the correlation data for each cluster for identifying the
5 individual ones of the M cluster of program channels.

1 20. The receiver of claim 19, wherein the means for comparing compares phases

2 of the correlation data for each cluster for identifying individual ones of the M clusters of
3 program channels.

Sub A 21. The receiver of claim 17 further comprising a means for combining the
2 correlation data for each cluster for providing a cluster synchronization signal.

1 22. A receiver comprising:

2 a demodulator, responsive to a signal, that provides a baseband signal representing
3 a transmission frame comprising clusters of data and, for at least two of the clusters,
4 further comprising cluster-specific synchronization data and wherein values of the cluster-
5 specific synchronization data is the same for the at least two of the clusters; and

6 a detector, responsive to the cluster specific synchronization data, for identifying
7 individual ones of the clusters of data.

1 23. The receiver of claim 22, wherein the value of the cluster-specific
2 synchronization data, which is the same for the at least two of the clusters, is represented
3 by a maximal length PN (pseudo-random number) sequence.

1 24. The receiver of claim 22 further comprising a plurality of correlators for
2 correlating the cluster-specific synchronization data for the at least two clusters for
3 providing correlation data for the at least two clusters; and wherein the detector compares
4 the correlation data for the at least two clusters for identifying the individual ones of the
5 clusters of data.

1 25. The receiver of claim 24, wherein the detector compares phases of the
2 correlation data for the at least two clusters for identifying individual ones of the clusters
3 of data.

Sub A 26. The receiver of claim 24 further comprising a combiner for combining the
correlation data for the at least two clusters for providing a cluster synchronization signal.